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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,926	07/10/2003	Hideaki Yamasaki	010986.52578US	9914
23911	7590	09/19/2008	EXAMINER	
CROWELL & MORING LLP			LUND, JEFFRIE ROBERT	
INTELLECTUAL PROPERTY GROUP				
P.O. BOX 14300			ART UNIT	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/615,926	YAMASAKI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeffrie R. Lund	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 07 July 2008.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 30-33,38,40-42,46,49-51 and 53-55 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 30-33,38,40-42,46,49-51 and 53-55 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 10 July 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____ .                        |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 30-33, 38, 40-42, 46, 49-51, and 53-55 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly amended claims have replaced the term "manometer" with the term "pressure gauge". The term "pressure gauge" is not taught by the drawings or specification. The specification teaches the use of manometers to measure the pressure. The term "pressure gauge" is not used in the specification. Replacing the term "manometer" with the term "pressure gauge" changes the claims because pressure gauges are not manometers, and confuses the claim because the specification teaches manometers not pressure gauges.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 30-33, 38, 40, 41, 46, 49, 51, and 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al, JP 2001-214270, in view of Ono, JP 47-10730, Ayers, US Patent 5,925,232, and Mantz et al, US Patent 4,410,273.

Tomita et al teaches a CVD apparatus that includes: a reaction chamber 1 evacuated, to a pressure of less than 667 Pa, by an evacuating system 3 and supporting a substrate 6 on a support 7; a source bottle 16-19 containing a liquid source material and forming a source gas therein as a result of vaporizing caused by a vaporizing gas (Ar) supplied via a first MFC 33-36 and vaporizing gas source line 20-23; a source gas supply lines 24-27 and 2 supplying said source gas from the source bottles 16-19 to said reaction vessel 1; a diluting inert gas supplied via a second MFC 37 and connected to the source gas supply line 2 at a node (junction of gas supply line 2 and source gas supply lines 24-27); an infrared gas analyzer 46 (including a gas concentration detection unit) located downstream of node (junction of gas supply line 2 and source gas supply lines 24-27) and upstream of the node 11; a bypass gas line 9

connected to the source gas supply line 2 at node 11 via valve 13; and a controller 47 controlling the first MFC 33-36 and second MFC 37, which control the flow rate of the gases as a result of the measurement of the concentration analyzer 46. (Figure, paragraph 20+)

Tomita et al differs from the present invention in that Tomita et al does not teach that the gas analyzer is inline between the source bottle and node; adjusting the dilution gas flow to maintain the desired concentration in the source gas ; that the source gas is W(CO)<sub>6</sub>; a manometer; or a signal processing unit.

Ono teaches a gas analyzer 27 provided in the source supply line (Figure 2), and controlling the dilution valve 23 and source valve 24 to maintain the proper concentration of the source gas (page 4).

Ayers teaches a closed feed back control system that varies the flow of a diluting gas (hydrogen) to maintain the desired concentration of the source gas (Example 5).

Mantz et al teaches a gas analyzer that includes a signal processing unit 58 that receives input from a manometer 60 and applies a correction to determine the absolute concentration of a sample. (Figure 1, column 5 line 64 through column 6 line 13)

The motivation for moving the gas analyzer of Tomita et al from a branch line and placing the gas analyzer inline with the gas source supply line, as taught by Ono, is to provide gas to the analyzer more directly, thereby decreasing the response time of the controller and improving the uniformity of the deposited layer. Furthermore, it has been held that the rearrangement of parts is obvious (see *In re Japikse* 86 USPQ 70).

The motivation for adjusting the flow of the dilution gas and or source gas in the apparatus of Tomita et al is to maintain the concentration of the source gas at the desired amount as taught by Ono et al.

The motivation for adjusting the flow of the dilution gas, while maintaining the flow of the source gas, in the apparatus of Tomita et al is to provide a specific way of controlling the concentration of the source gas as taught by Ayers.

The motivation for supplying W(CO)<sub>6</sub> to the reaction vessel of Tomita et al is to deposit a layer containing tungsten on the substrate as is well known in the art.

The motivation for adding a manometer and a signal processing unit to the apparatus of Tomita et al is to calculate the absolute concentration of the sample as taught by Mantz et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the analyzer of Tomita et al and place it inline with the gas source supply line as taught by Ono; control the flow of the diluting gas to maintain the concentration of the source gas as taught by Ono and Ayers; to supply W(CO)<sub>6</sub> to the reaction vessel; and add a manometer and signal processing unit as taught by Mantz et al.

6. Claims 42 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al, Ono, Ayers, and Mantz et al as applied to claims 30-33, 38, 40, 41, 46, 49, 51, and 53-55 above, and further in view of Satake et al, JP 2001-234348.

Tomita et al, Ono, Ayers, and Mantz et al differ from the present invention in that they do not teach that the concentration detector is a FTIR.

Satake et al teaches a coating chamber that includes a FTIR concentration detector 20. (Abstract, figure 7)

The motivation for using a FTIR concentration detector in the apparatus of Tomita et al, Ono, Ayers, and Mantz et al is to provide a specific concentration detector as required but only generically disclosed.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the FTIR concentration detector of Satake et al in the apparatus of Tomita et al, Ono, Ayers, and Mantz et al.

7. Claims 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al, Ono, Ayers, and Mantz et al as applied to claims 30-33, 38, 40, 41, 46, 49, 51, and 53-55 above, and further in view of Holst et al, US Patent Application Publication 2003/0056723 A1.

Tomita et al, Ono, Ayers, and Mantz et al differ from the present invention in that they do not teach that the concentration detector is a non-dispersion infrared spectrometer (NDIR).

Holst et al teaches using a NDIR concentration detector 20 to detect a concentration of material in a gas flow. (Paragraph 55)

The motivation for using a NDIR concentration detector in the apparatus of Tomita et al, Ono, Ayers, and Mantz et al is to provide a specific concentration detector as required but only generically disclosed.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the NDIR concentration detector of Holst et al in the

apparatus of Tomita et al, Ono, Ayers, and Mantz et al.

***Response to Arguments***

8. Applicant's arguments, see page 12 3<sup>rd</sup> paragraph, filed July 7, 2008, with respect to the objections to the drawings and 112 1<sup>st</sup> paragraph have been fully considered and are persuasive. The drawing objection and 112 1<sup>st</sup> paragraph rejection have been withdrawn.
9. Applicant's arguments with respect to claims 30-33, 38, 40-42, 46, 49-51, and 53-55 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (10:00 am - 9:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jeffrie R. Lund/  
Primary Examiner  
Art Unit 1792

JRL  
9/13/08